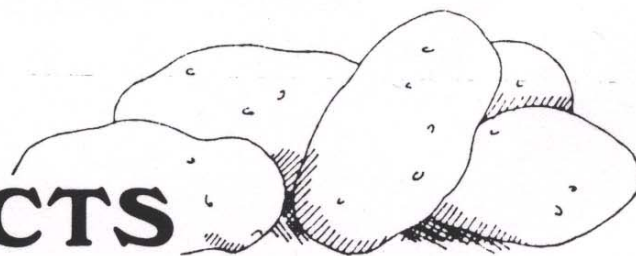




University of Maine
Cooperative Extension

POTATO FACTS



PRODUCING BARLEY IN MAINE

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New enthusiasm for barley production and marketing is emerging in Maine. Growers are seeking rotation crops that offer higher cash returns than oats. Potato farm soil tests show improvement in soil fertility and pH levels, which make them better suited to barley as an alternative crop. Central Maine dairy farmers are interested in using barley as a high-energy and protein feed grain. This has increased demand and created a new pre-season contract for growers to consider.

Barley is an excellent feed source for livestock. The protein content compares favorably with that of corn. The protein is more soluble and therefore may not provide quite the benefit of corn to dairy cattle, but may be substituted for corn for up to 60 percent of the feed concentrate.

Maine's cool climate and fairly uniform rainfall distribution are favorable for barley production. Barley performs well on moderately deep, well drained soils with pH levels of 6.0 or above.

An extensive barley variety performance trial has been conducted at Aroostook Research Farm during the past few seasons and excellent production data on several selections has been developed. Several two-row and six-row varieties have been included in the tests.

BARLEY VARIETIES:

Birka - A two-row, rough-awned variety with short straw and excellent lodging resistance. It is a Canadian release with fair disease resistance, good yield potential, high test weight and may produce malting barley quality. It has been the top yielding two-row variety in Maine tests over the last four years.

Rodeo - A two-row, rough-awned variety with short straw and good lodging resistance. This Canadian selection has fair disease resistance and high yield potential. It produces high test weight and, under some conditions, will grow malting quality grain. Four-year average yields in Maine have been slightly below those of 'Birka'.

Semira - A two-row, private Canadian variety that may be available from New York seed houses and a local cooperative. The variety is short-strawed and moderately lodging resistant, with Maine yields on par with 'Birka' or 'Rodeo'. Test weight is slightly below 'Birka'. Considered to have potential under Maine conditions.

Micmac - A two-row, rough-awned variety released by Ag. Canada (Charlottetown) in 1984. It has good yield potential (a leader in 1988 Maine test), medium straw strength, and fair disease resistance. It is quite early maturing by Maine standards.

Helena - A two-row variety developed in Europe. It is registered in Canada for its feed quality. Rated third highest in yield and second highest in test weight in two years of Maine trials. Appears to resist lodging well in Maine.

Leger - A six-row, smooth-awned variety released by Ag. Canada in 1983. It has good yield potential and disease resistance and produces moderate test weight. The variety is tall, but has fairly good resistance to lodging. 'Leger' has been the top yielding six-row in recent Maine tests.

Hazen - A six-row, malting barley variety from North Dakota, 'Hazen' has good disease resistance and fairly good lodging resistance. Yields have been just below those of 'Leger'.



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Robust - A six-row, malting quality barley released in Minnesota in 1983. It has good disease resistance but is susceptible to loose smut. Averaged seventh in yield and sixth in test weight in two years of Maine testing.

Caddette - A new, six-row variety released by Ag. Canada in 1986. It has good yield potential, but a lower test weight. It has high resistance to lodging and fair resistance to most foliar diseases.

SEED BED PREPARATION:

Barley must be planted early to take advantage of long daylight hours (photoperiod), which help provide shorter, stronger straw and higher grain yield. Early planting also leads to earlier grain ripening, which prevents late-season disease development and allows lower grain moisture levels before harvest. All small grains should be planted by the first week in May, soil conditions permitting. This will make for excellent shading competition to annual weeds.

Soils previously planted with potatoes will work well for barley culture if pH has been maintained. Soil should be deep tilled or moldboard plowed the previous fall to allow for early drying and early spring tillage. The seed bed should be fine, firm and smooth. If the soil is too loose, germination may be reduced and if the soil is dry, poor stands and lower yields will result. Pre-plant firming of the seed bed with a land roller may help firm the soil and improve the seed bed.

SEEDING METHODS AND RATES:

Ideally, barley should be seeded with a grain drill set to place seed 1 to 1.5 inches deep. Improper seed depths, often found to be 3 or 4", will reduce young seedlings vigor by requiring more root and below ground stem development. This reduces the early photosynthesis ability and may cause problems with stand, deficiency symptoms and yield loss. Planting too deep delays emergence and severely impacts on yield. Barley may be broadcast, but extreme care should be taken to avoid covering the seed too deep in working the seed into the soil. A lightweight harrow or a disc may be used to incorporate broadcast barley seed. Care should be taken to set the harrow shallow. The disc harrow should be gently angled. Follow working in the barley seed with a land roller or cultipacker operation to firm the seed bed.

Barley should be seeded at the rate of two to 2 1/2 bu (96 to 120 lbs.) per acre. Use high-quality, certified seed to assure good germination and low weed seed content. If seed is imported, a germination test must accompany the import request. Do not reduce seeding rates when planting barley. A high stand population (1,450,000 plants per acre) is essential for profitable yields.

FERTILIZING THE BARLEY CROP:

Barley responds well to high fertility, especially if short straw, lodging resistant varieties are to be grown. A soil test should be taken to determine pH and fertility levels. Lime should be applied to reach a minimum pH level of 5.7. Fertilize to the following general suggestion.

Soil Test Level	N	P ₂ O ₅	K ₂ O
Medium High or High (MH) - (H)	45	45	45
Low to Very Low (L) - (VL)	45	90	90

Example:

300# of 15-15-15 for MH or H levels.

450# of 10-20-20 for L or VL levels.

Avoid slow release forms of fertilizer nitrogen. Early uptake of nitrogen is important to achieve high yields with minimum maturity delay.

WEED CONTROL IN BARLEY:

Weeds not only compete with the grain crop for moisture and nutrients, they lower grain quality, and contribute to potential attack from insects and disease pathogens. Yield loss from weed competition cannot be tolerated in producing a profitable crop. Small grain herbicides should be applied early when minimal damage from field equipment is experienced. The grain crop is most severely damaged by early competition from weeds. Young weeds are most easily controlled by herbicide application.

Use a selective herbicide for broadleaf weeds and apply according to label directions for best performance. Control of grasses must be accomplished before planting small grains. Check with your local Cooperative Extension office for current recommendations.

UNDERSEEDING BARLEY:

Underseeding barley being grown for high yield and quality may result in serious yield and harvest loss. Many barley varieties have shorter straw length and underseeded legumes could pose a serious problem at harvest. Disease pressure may also be more severe due to higher humidity in the canopy when a companion crop is underseeded.

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Dr. Greg Porter, Agronomist with the Maine Agricultural Experiment Station has developed an intensive program of research on small grain management and varietal performance evaluation.

HARVESTING BARLEY:

Grain loss during barley harvest can become a significant factor in profitability. Very ripe barley may develop serious shatter losses during harvest. A valuable crop may be better harvested at a higher moisture level and dried before storage to prevent harvest shatter loss. Make sure the combine is properly adjusted to remove all grain heads from straw while allowing minimal yield loss as chaff. Barley ripens earlier than most oat and wheat varieties grown in Maine. Be prepared for early harvest. Some barley varieties may develop bent-over heads as they ripen. Be sure the cutter bar of the combine is adjusted low enough to reap and convey all crop into the cylinder and concave chamber. For minimal loss, operate the combine as close to manufacturers guidelines as possible.

BARLEY CROP BUDGET:

Production and market costs vary considerably from farm to farm, but the following budget suggestion may serve as a guide to determining a "fit" for barley in your farm plan.

Per Acre			
Item	Quantity	Price	Amount
RETURNS (Suggested local barley contract, 2 yields)			
Barley			
A. 48#@14%	75 bu./ac.	\$2.00	\$150.00
B. 48#@14%	100 bu./ac.	\$2.00	\$200.00
EXPENSES (Variable)			
Fall chisel-7 shank	.29 hr./A	38.18	11.07
Planting Costs			
Offset disc-14'	.164 hr./A	39.70	6.51
Drill/fert.-17'	.40 hr./A	64.58	25.83
Barley Seed	2.0 bu.	8.00	16.00
Fertilizer			
Nitrogen	45 lbs.	.26	11.70
Phosphorus	45 lbs.	.33	14.85
Potassium	45 lbs.	.20	9.00
Lime(applied)	800 lbs.	42.00	16.80
Weed Control			
Sprayer-30'towed	.07 hr./A	23.19	1.63
Herbicide,2,4-D	.125 gal	12.50	1.56
Harvest			
S.P. Combine	.36 hr./A	100.11	36.04
Hauling	.36 hr./A	25.59	9.21
Other Expense(fixed)			
Land value, \$500/acre			
Land Interest @8%	\$500	.08	40.00
Land Tax @ 25 mil		.025	12.50
Interest on investment @11%	160.20		17.62

TOTAL COSTS \$230.32

Return above costs shown

Yield A.	-\$80.32
Yield B.	-\$30.32

Return to cash flow costs (variable - depreciation + taxes)

Yield A.	\$12.19
Yield B.	\$62.19

Note: The costs in the barley budget include potential non-cash costs of management labor, equipment depreciation and storage, which could impact significantly on the cash flow profit from the enterprise.

REFERENCES

Maine Cooperative Extension Small Farm Fact Sheet No.7 "Growing Barley in Maine".

Maine Cooperative Extension 1985 Maine Farm Planning Guide, by E.S. Micka.

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